

# The Market Reaction To College Football Timing Rules Changes

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## Abstract

Gambling markets have historically provided a convenient and easily interpretable area for testing and examining the efficient markets hypothesis. This paper examines the aspect of efficient markets discussions that relates to the reaction (or overreaction) to specific events. This is accomplished by analyzing the betting market for college football total points in relation to a change in the timing rules that occurred prior to the 2006 season. The intent of the change in the rules was to “speed up” the flow of play in order to decrease the time required to complete each game. The analysis in this article examines the impact of these new timing rules on the total points scored in college football games for the 2006 season and on the ramifications these changes have for wagering on the total points scored in a game. The wagering results are discussed in terms of the efficiency of this gambling market and the subsequent implications for other behavioral markets.

## Introduction

Over the past few decades the analysis of the efficient markets hypothesis has been aided and enhanced through the study of gambling, especially sports betting markets. The nature of betting markets makes them a good source for examining efficiency because sporting events have immediate and observable

consequences. Games are won or lost; therefore, bets are won or lost. Studies of these types of markets don't present some of the difficulties associated with analyzing other types of financial markets. Results can be readily compared to those expected under conditions of efficiency and subsequently conclusions can be drawn.

Numerous studies of gambling markets have been published over the past few decades in an attempt to gain insight into the question of market efficiency. Weinbach (Introduction to Sports Symposium, 2005) examined and tested various gambling oriented questions that had behavioral finance implications. Weinbach (Market Efficiency and NCAA College Basketball Gambling, 2005) and Wolfers (2006) discussed how betting on college basketball games has been shown to be efficient in an overall sense, but there are specific potential inefficiencies for carefully selected situations. For instance, betting on college basketball teams that are favored and are playing on the road has been shown to be profitable. However, college basketball teams that are favored by a "large" amount (more than 12 points) have shown evidence of covering the point spread less than half of the time.

Some of these academic conclusions and interpretations have been questioned by gambling "practitioners;" thereby keeping the debate open as to the actual potential for the exploitation of such inefficiencies. Duffy (2006) argues against some of the inefficiency conclusions found in the aforementioned articles. Similar results have been shown for other gambling markets. Vergin and Scriabin (1978) and Golec and Tamarkin (1991) have published studies examining the betting market for pro football results against the point spread that have shown general overall efficiency, but there is a potentially profitable tendency for favorites to be "overbet". Thus, wagers made on the underdog in certain situations were shown to be profitable.

Paulson (2007) described a derivative of pro football point spread wagering called "teaser" betting that has historically exhibited profitable wagering opportunities. With teasers the bettor is given extra points in the game, but this advantage is counterbalanced by the requirement that they win two or more games to win their wager. Situations have been uncovered where such wagers have shown consistently positive expectation returns; thus, implying inefficiency. However, the limited availability of such wagering opportunities and the associated transaction costs cast doubt on the aforementioned inefficiency implication.

Evidence derived from college football betting leads to similar conclusions. Golec and Tamarkin (1991) showed that a bias existed toward betting on favorites, but not one of a sufficient nature as to insure wagering profitability. This implied a general efficiency for this market. Paul, Weinbach, and Weinbach (2003) contained a study that included an analysis of wagering against college teams that were heavily favored while playing on the road that

indicated evidence of statistical profitability. This indicates a possible inefficiency for this uniquely identified situation.

Gamblers can also wager on the total number of points that will be scored by both teams combined in a sporting event. Paul and Weinbach (2002) discussed how violations of the efficient markets hypothesis have been shown to exist in the totals market for pro football, while Paul and Weinbach (2004) showed similar results for the pro basketball betting market. Betting on “over” the total number of points that is quoted by the bookmaker tends to be the more popular choice among gamblers, especially uninformed ones. The casual fan is most likely inclined to want to root for more points rather than less in most situations. Cheering for a football team to punt or a basketball player to hold the ball and not try to score seems to go against our competitive nature. Thus, betting on the “over” tends to be more pervasive.

Pro betting markets have shown somewhat overall efficiency, but bets on the “under” have exhibited profitability for games that were expected to be higher scoring. In numerous examples the hypothesis of market efficiency has been rejected, but a test of betting profitability after taking the bookmaker’s vigorish (11/10 commission) into account tends to be inconclusive. Finally, Weinbach (Bettor Preferences and Market Efficiency in Football Totals Markets, 2005) describes a similar bias in college football betting. A preference was found for bettors to wager on the “over” in college football, with the ratio of uninformed to informed bettors and the existence of limits (maximum amounts) for the bets helping dictate the degree of betting bias.

This paper analyzes a specific phenomenon that recently arose regarding rules changes that impacted the points scored in college football games and the subsequent effect that those changes had upon the market for betting on combined total points. Prior to the 2006 college football season, the NCAA enacted timing rules changes in an attempt to “speed up” the games. The perception was that games were lasting too long. This contributed to concern voiced by the television networks who had paid for the rights to show the games. The network executives, their sponsors, and the powers to be in the NCAA determined that the time had come to try to “shorten” the total amount of time that the games were taking. Specific changes were enacted governing when the football timing clock would stop and when it would continue to run.

Whiteside (2006) describes the two basic timing alterations. One change involved starting the clock on a kickoff when the ball is kicked; not when the receiving team touches the ball. The second change authorized the starting of the clock on a change of possession when the ball is marked ready for play; not when it is ultimately snapped. The general expectation was that these changes would shorten the time of a game, and thus lower the number of points scored. How gamblers would adjust their wagering based on the new timing rules was subject to speculation. That is the issue examined in this paper. This is

accomplished by the efficiency of the market for total betting under the “old” timing rules being compared to the efficiency of the market under the revised rules. This type of analysis has potential value in assessing how people assimilate new information in a decision making context. Thus, this paper deviates from typical gambling market efficiency articles in that it examines the efficiency before and after a “shock” to the system. This contrast helps evaluate how people update their information sets and how they recalibrate their thought processes given new input.

## **Scoring and Betting Results**

For the NCAA games for which total points were quoted for betting purposes, the average number of points scored in the 2005 season was 52.33 per game. For 2006, the corresponding average was 47.15 points per game. The average over/under number quoted by the bookmakers for betting purposes in 2005 was 52.07 and in 2006 it was 47.69. Thus, the number quoted for betting purposes seems to have been adjusted somewhat appropriately given the timing rules changes.

Prior to the 2006 season the market for “totals” or “over/under” betting in college football was relatively efficient. See Table 1 below.

**Table 1 – Over/Under Wagering Results<sup>1</sup>**

<u>Year</u>	<u>Over</u>	<u>Under</u>	<u>Tie</u>	<u>% Over</u>
2003	336	334	9	50.15
2004	298	300	11	49.83
2005	333	323	9	50.76
2006	333	372	9	47.23

Table 1 shows that for the three years prior to the 2006 college football season the market for totals betting was almost a 50/50 proposition. There was a slight propensity for games to go over the total projected number of points (967-957, or 50.26 percent). This perceived efficiency seems to have somewhat disappeared with the timing rule changes that were implemented in for the 2006 season. The 47.23 percent figure for games going over the quoted point betting point total differs significantly from the assumed 50 percent figure expected by chance. Based on the 2006 data, a test of the hypothesis that the proportion of winning bets on the over is equal to 0.50 versus the alternative that the proportion is less than 0.50 (which would be anticipated if the betting public doesn’t appropriately assimilate the new rules changes into their handicapping methodology) yields a “Z” score of  $(0.4723-0.5)/[(0.5)*(0.5)/705]^{1/2} = -1.47$ . This equates to a p-value of approximately 0.07. The comparable calculations for the previous three year period yield statistically insignificant results with  $Z = 0.23$  and a p-value of 0.591. Therefore, the bettors’ inability to incorporate these rules

changes and the subsequent adjustment in the totals that were quoted for betting purposes seemed to lead to uninformed decisions.

As shown in Table 1, bettors didn't seem to appropriately integrate the information contained in the rules changes into their betting behavior. The decision making mechanisms used by the bettors proved to be inadequate in adjusting to the new situation that arose from the "shock" to the system created by the new scoring environment. As anticipated by those advocating the rules changes, the average time to complete a college football game decreased by about 14 minutes from roughly 3 hours and 20 minutes down to 3 hours and 6 minutes. The number of plays that were run decreased by about 14 plays per game; thus contributing to the decrease in scoring. So, the expectations about the duration of, and subsequent scoring in, games was realized. The surprising result seemingly revealed here is the apparent inability of bettors to process this information for gambling decision making purposes.

Another issue that merits a quick examination is whether or not the wagering results gravitated toward "efficiency" as the season progressed. One might expect that the largest deviation from the normally anticipated 50/50 split of over and under results would occur early in the season and that the bias toward games falling "under" the betting total would move closer to the 50 percent mark as the information contained in the rules changes was assimilated into the bettors' thought processes.

Breaking the season up into four roughly equal time periods (in terms of the number of games played) somewhat supported this intuitive expectation. Games played prior to September 18, 2006 yielded an "over" rate of 44.2 percent. For the period September 18 – October 8, 47.9 percent of the games went "over." From October 9 – October 31, 45.8 percent of the games ended up "over" the quoted total. Finally, for the period from November 1, 2006 until the end of the season, 49.2 percent of the games went "over." Thus, the time series progression here isn't definitive, but, starting in November, the results hint at a much more unbiased balance of wagers. This agrees with the notion that bettors were acquiring information and doing a better job of processing that information by the latter part of the season.

## **Conclusions**

The market reaction to the changes in timing rules for college football games appears to have been inadequate or "inefficient". Gamblers seem to have reacted inappropriately to the changes, and this led to an inefficient market for totals betting in the 2006 season. There should have been more wagers made betting on the total going "under" the quoted value and fewer bets made on the "over". This assumes that the bookmakers were attempting to balance the amount of money placed on each side in order to give themselves a certain return with no risk. In actuality, such a balance rarely occurs. Also, if there is an

asymmetry of information, it could be to the bookmakers' advantage to not balance the wagering action. However, bookmakers usually attempt to reduce risk as much as possible. Therefore, the inefficiency conclusion probably best explains the wagering results.

The results of this study have implications for a variety of aspects of human decision making behavior. For example, comparable situations arise in financial decision making scenarios. An alteration in economic conditions or in the interest rate environment can lead to decision making thought processes similar to those described in this paper. The subsequent decision-making behavior can be compared to, or modeled by, the football betting activities analyzed above.

Financial market overreaction or underreaction to various "shocks" to the system or other recent events has been looked at in various studies. Madura and Schnusenberg (2001) examined six U.S. market indices and found both one-day and sixty-day underreactions following positive and negative "shocks" (days on which an index experienced abnormally high or low returns). Galariotis, Kassimatis, and Spyrou (2005) looked at UK markets and found that small and medium capitalization stock portfolios exhibited a significant underreaction on subsequent days to both positive and negative shocks.

Biases toward a particular type of behavior can be exposed. For example, in the football betting analyzed for the 2006 season, there was a bias toward betting on higher scoring games. In financial analysis such a bias might exist toward "betting" on higher stock values, or underestimating the effect of specific news events on price changes.

Clearly, an analysis of betting markets can aid our understanding of how other markets work and of human behavior in general.<sup>2</sup>

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## Endnotes

<sup>1</sup>The Gold Sheet (2007) handicapping website provided the data for Table1, <http://www.goldsheet.com/historic.php>.

<sup>2</sup>Prior to the 2007 season the timing rules for college football were changed back pretty much to agree with those in place in 2005 and before. As of the writing of this paper the scoring and betting results from erasing the 2006 changes are still pending.

Note: Title graphic designed by Carole E. Scott

